CLAIMS

I claim:

1. A method of obtaining information stored on a storage component, the method comprising:

receiving light from the storage component,

wherein the light is indicative of the information stored on the storage component, and

wherein a wavelength of the light is within a window in the vacuum ultraviolet region of the electromagnetic spectrum within which a local minimum in the absorption coefficient of Oxygen occurs, the window being at least one of about 1.0 nm and about 2.0 nm in width.

2. The method of claim 1, wherein the wavelength of the light is approximately 121.6 nm.

3. The method of claim 1, further comprising:

transmitting the light to the storage component, wherein the received light is reflected by the storage component in response to the transmitting of the light to the storage component.

4. The method of claim 3, further comprising:

generating the light at a light source.

5. The method of claim 4, wherein the light source includes at least one of Hydrogen and Deuterium.

6. The method of claim 4, wherein the light source generates the light as a result of a gas discharge process, and wherein the wavelength of the light corresponds to a Hydrogen Lyman-α emission line.

7. The method of claim 4, wherein gas is excited by way of microwave energy within the light source to generate the light.

8. The method of claim 4, wherein the light generated by the light source is transmitted to the storage component by way of at least one optical device selected from the group consisting of a mirror, a beam splitter and a lens.

9. A method of obtaining information stored on a storage component, the method comprising:

transmitting light toward the storage component;

reflecting at least a first portion of the light off of the storage component; and

receiving at least a second portion of the first portion of the light at a receiving device,

wherein the received light is indicative of the information stored on the storage component, and

wherein the light is at a wavelength within the vacuum ultraviolet region of the electromagnetic spectrum for which the absorption coefficient of Oxygen is less than 25 atm^{-1} cm^{-1} at standard temperature and pressure.

10. The method of claim 9, further comprising generating the light at a light source by way of a gas discharge process, wherein the wavelength corresponds to a Hydrogen Lyman-α discharge line.

11. A method of interacting with an optical storage medium, the method comprising:

operating a light source in a manner causing the light source to generate light at a wavelength corresponding to a Hydrogen or Deuterium Lyman-α line; and

directing the light generated by the light source toward the optical storage medium.

12. The method of claim 11, further comprising:

receiving a reflected portion of the light that is directed toward the optical storage medium after being reflected off of the optical storage medium, wherein the received,

reflected portion of the light is indicative of information stored on the optical storage medium.

13. The method of claim 11, wherein the light directed toward the optical storage medium causes a change in an optical characteristic of a portion of the optical storage medium when the light reaches the optical storage medium.

14. The method of claim 13,

wherein the light source is operable to generate the light at a higher-power level and also at a lower-power level, and

wherein, when at the higher-power level, the light causes the change in the optical characteristic of the portion of the optical storage medium and, when at the lower-power level, the light is only reflected off of the optical storage medium and does not change the optical characteristic.

15. A method of storing information on a storage component, the method comprising:

providing a storage medium having an optical characteristic that varies in response to being exposed to light at a first wavelength; and

exposing at least a first portion of the storage medium to the light at the first wavelength to cause a change in the optical characteristic of the exposed first portion;

wherein the first wavelength of the light is within a window in the vacuum ultraviolet region of the electromagnetic spectrum within which a local minimum in the absorption coefficient of Oxygen occurs, the window being at least one of about 1.0 nm and about 2.0 nm in width.

16. The method of claim 15, wherein the optical characteristic is a reflectivity of the storage medium, and the exposing of the first portion of the storage medium to the light causes a melting of a deposit associated with the first portion so as to change the reflectivity of the storage medium at the first portion.

17. The method of claim 15, further comprising exposing successive portions of the storage medium to the light at the first wavelength to cause changes in the optical characteristic of the exposed successive portions.

18. The method of claim 17, wherein the storage medium is rotated so that the first and successive portions of the storage medium are exposed to the light, and wherein the light is at a wavelength of approximately 121.6 nm.

19. The method of claim 17, further comprising exposing further portions of the storage medium to the light at the first wavelength, wherein the changes in the optical characteristic are caused when the light has an intensity above a threshold, and wherein the intensity of the light is modulated as the first, successive and further portions of the storage medium are exposed to the light so that the optical characteristic is changed with respect to the first and successive portions but not the further portions, such that information is stored on the storage medium.

20. A method of storing information on a storage component, the method comprising:

providing a storage medium having an optical characteristic that varies in response to being exposed to light at a first wavelength; and

exposing at least a first portion of the storage medium to the light at the first wavelength to cause a change in the optical characteristic of the exposed first portion;

wherein the first wavelength is within the vacuum ultraviolet region of the electromagnetic spectrum, and wherein an absorption coefficient of Oxygen corresponding to the first wavelength is less than 25 atm^{-1} cm^{-1} at standard temperature and pressure.

21. An optical storage device comprising:

an optical storage medium; and

a light source capable of generating light that is transmitted to the optical storage medium;

wherein the light generated by the light source is at a first wavelength that is within the vacuum ultraviolet region of the electromagnetic spectrum and satisfies at least one of the following criteria:

(i) the first wavelength is within about a 1.0 nm-wide window in the vacuum ultraviolet region of the electromagnetic spectrum within which a local minimum in the absorption coefficient of Oxygen occurs;

and

(ii) an absorption coefficient of Oxygen at standard temperature and pressure that corresponds to the first wavelength is less than 25 atm^{-1} cm^{-1}.

22. The optical storage device of claim 21, wherein the light source generates the light by way of a gas discharge process, and the first wavelength of the light corresponds to a Hydrogen Lyman-α line or a Deuterium Lyman-α line.

23. The optical storage device of claim 22, wherein the light source operates to perform the gas discharge process by exciting a gaseous Hydrogen isotope using microwave energy.

24. The optical storage device of claim 21, wherein the light source is capable of being varied in its power output so as to provide a higher-level power output and one of a lower-level power output and a zero-level power output.

25. The optical storage device of claim 24, wherein the optical storage medium includes a surface having an optical characteristic that is capable of varying with location along the surface.

26. The optical storage device of claim 25, wherein the optical characteristic is reflectivity.

27. The optical storage device of claim 26, wherein the optical storage medium includes a substrate surface on which a chemical coating is deposited, wherein the

chemical coating melts when exposed to light that is provided by the light source at the higher-level power output, wherein the chemical coating has a first reflectivity prior to the melting and a second reflectivity after the melting upon returning to a solid phase, and wherein the optical storage medium is a disk that is rotatable.

28. The optical storage device of claim 21, further comprising an optical component that is optically coupled between the light source and the optical storage medium, wherein the optical component focuses the light generated by the light source into an illumination spot on the optical storage medium.

29. The optical storage device of claim 21, further comprising a sensing component, wherein at least a portion of the light that is transmitted to the optical storage medium is reflected by the optical storage medium and received by the sensing component.

30. The optical storage device of 29, wherein the sensing component is capable of detecting information stored on the optical storage medium based upon the received portion of the light.

31. An apparatus for interfacing an optical storage medium, the apparatus comprising:

a light source that generates light; and

at least one optical component that receives the light generated at the light source and transmits at least a portion of the light to the optical storage medium;

wherein the light generated by the light source is at a first wavelength that is within the vacuum ultraviolet region of the electromagnetic spectrum and satisfies at least one of the following criteria:

(i) the first wavelength is within about a 1.0 nm-wide window in the vacuum ultraviolet region of the electromagnetic spectrum within which a local minimum in the absorption coefficient of Oxygen occurs;

and

(ii) the absorption coefficient of Oxygen at standard temperature and pressure that corresponds to the first wavelength is less than 25 atm^{-1} cm^{-1}.

32. The apparatus of claim 31, further comprising:

means for receiving reflected light that is reflected by the optical storage medium and producing a signal in response thereto, wherein the reflected light includes at least a first portion of the light generated by the light source, and wherein the reflected light is indicative of information stored on the optical storage medium.

33. The apparatus of claim 32, wherein the at least one optical component includes a first mirror that receives the light from the light source, a first lens that focuses the light, a beam splitter that further transmits the light, and a second lens that focuses the light upon the optical storage medium, and wherein the light reflected by the optical storage medium is transmitted through the lens to the beam splitter, and at least a second portion of the light is transmitted by way of the beam splitter toward the receiving means.

34. The apparatus of claim 33, further comprising at least one device for varying the focusing provided by the second lens by moving the second lens.

35. The apparatus of claim 31, wherein the first wavelength of the light corresponds to a Hydrogen Lyman-α line or a Deuterium Lyman-α line.